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A Method For Collecting And Providing Network and User Information

Field of the Invention

This invention relates generally to computer networks and, in particular, to a method for exchanging information between a host computer and a plurality of computers and computer networks.

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Background of the Invention

Computer networks are known to include a plurality of computers and a server. The server typically stores shared software applications and data bases which any of the computers may access via the network. The computers may be of any type, for example, they may be personal computers, work stations, etc. Within such computer networks, each computer may communicate, via a local area network (LAN), with other computers in the network. For example, one computer may send an electronic mail message or a file to any other computer in the network. In addition, the network allows the computers to share software applications, such that only one software application is needed for a plurality of computers.

As is also known, computer networks may be coupled to other computer networks via telephone lines. Over such connections, networks may further share information and utilize such services as bulletin boards and centralized data bases. As technology continues to advance, the networks can share more and more information and are becoming larger and larger. With such growth, it may be

difficult to maintain current software within the network due to the frequent occurrence of software and hardware updates. To update, or enhance, existing computer networks, software must be loaded at the site of the server, where trouble shooting, if needed, is carried

5   out as well. If there is a plurality of computer networks coupled together, each computer network must be serviced independently, thereby requiring a substantial amount of effort and time to update and/or enhance the networks. Alternatively, updates and/or enhancements may be transmitted over telephone lines. In this case,

10   a person is not required to be at the site of the server, but each computer network needs to be individually serviced due to the limitations of the public telephone switching network.

In additional to the difficulties in updating and enhancing
15   computer networks, manufactures of software applications and hardware have a difficult time in obtaining marketing information such as what software applications are being used, how often they are used, on what types of computers, etc. With this type of marketing information, manufacturers are more efficient in providing updates

20   and/or enhancements of software. However, at present, manufacturers collect such data in a rather static fashion. For example, manufacturers use personal polling, return warranty cards, or sales statistics to acquire marketing information. With these static data collection methods, manufacturers collect only a small portion

25   of the data available which may be weeks or months old by the time it is compiled.

Therefore, a need exists for a method that allows a plurality of computer networks to receive updated and/or enhanced information
30   simultaneously and for manufactures to dynamically collect marketing information regarding the structure and services being presently used by the computer networks.

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Brief Description of the Drawings

FIG. 1 illustrates a schematic diagram of a plurality of
computer networks, a plurality of computers, a host computer
5   coupled together through a communication network in accordance
with the present invention.

FIG. 2 illustrates a logic diagram that may be utilized to
implement the present invention.
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Description of a Preferred Embodiment

Generally, the present invention provides a method for
15   collecting network information from and providing user information
to a plurality of computers either in networks or separately. This is
accomplished by transmitting network information from servers of
computer networks (or an individual computer) to a host computer
via a communication resource. Once the host computer receives the
to produce stored network information
20   network information, the information is stored as either statistical
information or configuration information. From the stored
information, the host computer determines whether any server is in
it
need of specific user information. If a server needs the information,
the host computer transmits the specific user information to the
25   particular server. Upon receiving this information, the server
displays the information such that it may be utilized throughout the
computer network. Thus, the present invention provides network
information to a host computer which may be compiled into
marketing information reports and also provides computers and/or
30   computer networks with immediate access to user information such
as bugs reports, bug fixes, software updates, free software, and
pricing information.

The present invention can be more fully described with
35   reference to FIGs. 1 and 2. FIG. 1 illustrates a global schematic of a

computer area 100. The computer area 100 includes a plurality of computer networks, a plurality of computers, and as host computer 101. Host computer 101, which may be any type of personal computer, comprises a communication device 102, and a data base

5   103, which may be RAM, disc, magnetic storage, or any other means for storing digital information. Of the two computer networks shown, one includes computers 104 - 107, which may be any type of personal computer, workstation, or other type of computing device. The network also includes a server 108, which may be a supervisory

10   computer, that is coupled to a communication device 109. The other computer network includes computers 110 - 113, a server 114 and a communication device 115. As in the other computer network, the computers may be personal computers or work stations, where the server is a computer dedicated to serve the system. Communication

15   devices 102, 109 and 115 may be RF radios which may be an RF radio that transceives information over wireless communication resources or channels.

Computer area 100 further includes separate computers 116

20   and 118 that are each coupled to communication devices 117 and 119. Computers 116 and 118 may be personal computers or workstations and communication devices 117 and 119 may be RF radios. If communication network 120 is a telephone system as opposed to a wireless communication system, communication devices

25   102, 109, 115, 117, and 119 would be modems.

In computer area 100, host computer 101 communicates information over radio frequency (RF) communication channels to communication devices 102, 109, 115, 117, and 119 via wireless

30   communication network 120. In a preferred embodiment, communication network 120 is a trunked communication system, a multi site trunked communication system, a conventional communication system, or any communication system that transceives information over RF communication channels or

35   resources. In communication system 120, the communication

channels may be frequency carriers, pairs of frequency carriers, time division multiplex slots, frequency division multiplex slots, or code division multiplex slots.

5   The information transmitted over the communication channels is either network information 126 or user information 127 -130. Network information 126 is transmitted from communication devices 109, 115, 117, 119 via communication network 120 to host computer 101, whereas user information 127 - 130 is transmitted

10 from host computer 101 to the communication devices 109, 115, 117 and 119. Note that transmission of network information 126 and user information 127 - 130 is done in a conventional manner within the specific types of communication systems. For example, if communication system 120 is a trunking system, host computer 101

15 would need to request and receive a communication channel to transmit user information 127 - 130. Similarly, a communication channel would have to be requested and granted to transmit network information 126. Formatting of network information 126 and user information 127 -130 may be any type that is compatible with the

20 system type. Thus, no further discussion will be presented on the manner of transmission or the means for transmitting except to facilitate the understanding of the present invention.

   Network information 126 includes configuration information

25 and statistical information. The configuration information contains information regarding the platform of the network, or individual computers, and software applications contained within the network, or individual computers. The platform information indicates the type of hardware contained within the network, or within the

30 individual computer. User information 127 - 130 includes customer information which may be bug reports, bug fixes, updates of software applications, free software, pricing information, and enhancements of existing software applications. How network information 126 and user information 127 - 130 are utilized will be

35 discussed below.

FIG. 2 illustrates a logic diagram that may be used to implement the present invention. At step 200, servers of computer networks (or computers in a separate computer area) transmit
5 network information to a host computer via a communication channel. As mentioned above, the network information may be statistical information or configuration information. Statistical information indicates how many times a particular software application is used, how often the network or computer is used, and
10 any other type of statistical information that may be compiled regarding the use of the network or computer. The configuration information indicates the number of computers in the network, types of computers, types of software applications, revision levels of the software applications, and any other type of platform information or
15 software application information.

Upon receiving the network information, the host computer stores it 201 and determines if any computers, or servers, (users) require specific user information 202. The host computer may
20 determine that a computer or server needs specific user information if the computer or server has an old version of a software application, or is having difficulties with a particular software application. The host computer may also receiver a request for specific user information from the computer or server. If no
25 servers or computers require specific user information 202, the process repeats at step 200. If, however, a computer or server requires specific user information, the host computer transmits the specific user information to the server via a communication resource 205. (Note that the network information may be transmitted on one
30 communication channel while the user information may be transmitted on another communication channel or the information may be transmitted on the same channel.) Upon receiving the specific user information, at least a portion of it is displayed to at least one member of the computer network. By displaying the

information, it can be processed by a computer, stored, or subjected to any number of computer functions.

5   In addition to providing specific user information, the host computer may transmit user information to all of the servers and stand alone computers. This global transmission of user information may be done simultaneously over the RF communication channel such that millions of computers may be reached at one time. This type of simultaneous transmission of user information is not

1 0   obtainable with public telephone switching networks unless a telephone line is allocated to each network and computer. Thus, to achieve the coverage that can be obtained with an RF communication channel as disclosed by the present invention, up to hundreds or thousands of telephone lines would be required.

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    The host computer may do considerably more with the network information than provide specific user information. For example, the network information may be used to verify that software applications stored at each computer network, or computer

2 0   are authorized copies of the software applications 203. If the copies are not authorized, the host computer may send a message indicated that the software is not authorized and request that it be destroyed. The host computer may also transmits a message that disables the software application, or send an authorized copy of the software and

2 5   bill the user of the computer or network. All of this can be done over an RF communication channel with very little expense to the operator of the host computer. In addition to monitoring for unauthorized copies of software applications, the host computer may use the network information to generate user marketing reports 204.

3 0   Because the RF channels can reach literally millions of computers at one time, a tremendous amount of data may be dynamically obtained. Thus, marketing information that is hours old containing a substantial amount of data may be used by manufactures to obtain a much improved reading of the marketplace as to opposed to the

3 5   prior art static methods of collecting such data.

As a working examples of the above, consider a computer area that has several networks and several stand alone computers. The computer networks include several computers, a server and a

5 communication device. Each of the individual or stand alone computers is coupled to a communication device, wherein the communication device can transceive information to and from a host computer which is also coupled to a communication device. In such an environment, network information is transmitted from time-to-

10 time from the communication devices associated with the server or individual computers to the host computer. The transmission may be initiated independently by the server, or individual computer, on a timed basis such as once a day or at some other interval. In addition, the transmission may be initiated in response to the host computer

15 sending a request for information transmission. The network information, as mentioned above includes specific information regarding the configuration of the networks. This type of network information may be compiled to provide specific customer information. For example, the information may indicate the type of

20 computers that are associated with the network, the software applications used, how often the computers are used, how often the software is used, if the software is being utilized in an unauthorized manner, and the number of users sharing a specific application. Upon receiving this information, the host computer can compile it to

25 provide the marketing information. With such marketing information, the manufacturers have a dynamic means for assessing how its product is being utilized within the market place.

In exchange for receiving the network information, the host

30 computer provides specific user information to the networks. For example, upon receiving the network information, the host computer may determine that a specific network has a old version of a software application and transmits, over the RF channel, information to the network that a new version of the software application is

35 available and how much that would cost. If the user wants the

update, a message is sent, over the RF channel, to the host computer indicating the desire to purchase the updated software. In response, the updated software is transmitted, over the RF channel, to the network which can be immediately used. In addition, when the host

5   computer has general information, such as a new software program is available, the host computer only needs to transmit the message once and it will be received by a multitude of computers. Thus saving the manufacturer considerable amounts of money in advertising and production of discs.

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The present invention provides a method for collecting network information from and providing user information to computer networks or stand alone computers. With such a method, a host computer can dynamically compile marketing information that

15   indicates the types of hardware and software being used as well as the frequency of use, which was not available prior to this invention. In exchange for the network information, the host computer simultaneously provides user information to a multitude of computer networks and computers over an RF channel, where the user

20   information may be updated software, bug fixes, etc. Prior to this invention such user information could only be provided on a disc or over a telephone line to one computer or one network at a time.